

SEQUENCE LISTING

<110> Hengst den, Christiaan D.  
Gajic, Olivera  
Kuipers, Oscar P.  
Kok, Jan  
Sikkema, Jan  
Geurts, Johannes M.W.  
Nauta, Arjen

<120> Methods and means for regulating gene expression

<130> P63590US00

<140> US 10/562,601  
<141> 2005-12-28

<150> PCT/NL2004/000474  
<151> 2004-07-02

<150> EP 03077074.7  
<151> 2003-07-02

<160> 234

<170> PatentIn Ver. 3.3

<210> 1  
<211> 23  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> CodY target sequence from Lactobacillus

<400> 1  
atgttcagaa aattcatgaa cat 23

<210> 2  
<211> 19  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> primer sto 14

<400> 2  
cttgccatgg aatcacccg 19

<210> 3  
<211> 28  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> primer opp1

<400> 3  
gctctagaca ctcacttgg ttgcttcc 28

<210> 4  
<211> 27  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> primer opp2

<400> 4  
aactgcagga aaattcatga acatacc 27

<210> 5  
<211> 28  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> primer opp3

<400> 5  
aactgcagta aaacaataat aaaaggcag 28

<210> 6  
<211> 27  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> primer opp4

<400> 6  
aactgcagga taataaaatt tggactg 27

<210> 7  
<211> 27  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> primer opp14

<400> 7  
aactgcagcg taatgttcag aaaattc 27

<210> 8  
<211> 38

<212> DNA		
<213> Artificial Sequence		
<220>		
<223> primer opp15 (a)		
<400> 8		
aactgcagcg taatatttag aaaattcatg aacatacc		38
<210> 9		
<211> 38		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> primer opp15 (b)		
<400> 9		
aactgcagcg tactgtgccg aaaattcatg aacatacc		38
<210> 10		
<211> 27		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> primer cod280A		
<400> 10		
gggaattcgg attgtctatc tgcctcg		27
<210> 11		
<211> 36		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> primer cod280B		
<400> 11		
gggggatcca gatctgacca tgattacgcc aagctt		36
<210> 12		
<211> 60		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> primer HC-5		
<400> 12		
ctagaccacc atggggcatc accatcacca tcacgtggct acattacttg aaaaaacacg	60	

```

<210> 13
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
<223> primer HC-6

<400> 13
ctagtctaga ttagaaatta cgtccagcaa gtttatac 37

<210> 14
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> inversely repeated (IR) cis-element

<400> 14
aattttcwga aaattt 15

<210> 15
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> consensus sequence GTP binding motif in CodY homologs

<220>
<221> Variant
<222> (2)..(2)
<223> Gly or Arg

<220>
<221> Variant
<222> (3)..(3)
<223> Met, Gly, Ile, Lys, Gln

<220>
<221> Variant
<222> (4)..(4)
<223> Arg or Gly

<220>
<221> Variant
<222> (5)..(5)
<223> Leu or Thr

<220>
<221> Variant
<222> (7)..(7)

```

<223> Thr or Ser

<400> 15

Gly Xaa Xaa Xaa Xaa Gly Xaa Thr  
1 5

<210> 16

<211> 8

<212> PRT

<213> Escherichia coli

<220>

<221> BINDING

<222> (1)..(8)

<223> /note="Putative GTP binding motif G1"

<400> 16

Leu Gly Gly Gly Thr Gly Thr Gly  
1 5

<210> 17

<211> 8

<212> PRT

<213> Bacillus subtilis

<220>

<221> BINDING

<222> (1)..(8)

<223> /note="Putative GTP binding motif G1"

<400> 17

Gly Gly Glu Arg Leu Gly Thr Leu  
1 5

<210> 18

<211> 8

<212> PRT

<213> Bacillus halodurans

<220>

<221> BINDING

<222> (1)..(8)

<223> /note="Putative GTP binding motif G1"

<400> 18

Gly Gly Gln Arg Leu Gly Thr Leu  
1 5

<210> 19

<211> 8

<212> PRT

<213> Clostridium difficile

<220>  
<221> BINDING  
<222> (1)..(8)  
<223> /note="Putative GTP binding motif G1"

<400> 19  
Gly Gly Met Arg Leu Gly Ser Leu  
1 5

<210> 20  
<211> 8  
<212> PRT  
<213> Clostridium acetobutylicum

<220>  
<221> BINDING  
<222> (1)..(8)  
<223> /note="Putative GTP binding motif G1"

<400> 20  
Asn Arg Glu Arg Leu Gly Thr Leu  
1 5

<210> 21  
<211> 8  
<212> PRT  
<213> Streptococcus pneumoniae

<220>  
<221> BINDING  
<222> (1)..(8)  
<223> /note="Putative GTP binding motif G1"

<400> 21  
Ser Gly Ile Arg Leu Gly Ser Leu  
1 5

<210> 22  
<211> 8  
<212> PRT  
<213> Enterococcus faecalis

<220>  
<221> BINDING  
<222> (1)..(8)  
<223> /note="Putative GTP binding motif G1"

<400> 22  
Ala Gly Lys Arg Leu Gly Thr Ile  
1 5

<210> 23

<211> 8  
<212> PRT  
<213> Lactococcus lactis

<220>  
<221> BINDING  
<222> (1)..(8)  
<223> /note="Putative GTP binding motif G1"

<400> 23  
Ser Gly Met Arg Leu Gly Thr Phe  
1 5

<210> 24  
<211> 4  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> consensus sequence GTP binding domain in CodY homologs

<220>  
<221> Variant  
<222> (2)..(2)  
<223> Arg, Ala, Lys

<220>  
<221> Variant  
<222> (3)..(3)  
<223> Val, Phe, Ile

<400> 24  
Asp Xaa Xaa Gly  
1

<210> 25  
<211> 4  
<212> PRT  
<213> Escherichia coli

<220>  
<221> BINDING  
<222> (1)..(4)  
<223> /note="Putative GTP binding motif G3"

<400> 25  
Asp Ala Phe Gly  
1

<210> 26  
<211> 4  
<212> PRT  
<213> Bacillus subtilis

<220>  
<221> BINDING  
<222> (1)..(4)  
<223> /note="Putative GTP binding motif G3"

<400> 26  
Asp Arg Val Gly  
1

<210> 27  
<211> 4  
<212> PRT  
<213> Clostridium difficile

<220>  
<221> BINDING  
<222> (1)..(4)  
<223> /note="Putative GTP binding motif G3"

<400> 27  
Asp Arg Ile Gly  
1

<210> 28  
<211> 4  
<212> PRT  
<213> Lactococcus lactis

<220>  
<221> BINDING  
<222> (1)..(4)  
<223> /note="Putative GTP binding motif G3"

<400> 28  
Asp Lys Ile Gly  
1

<210> 29  
<211> 4  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> consensus sequence GTP motif in CodY homologs

<220>  
<221> BINDING  
<222> (1)..(4)  
<223> /note="Putative GTP binding motif G4"

<220>  
<221> VARIANT  
<222> (3)..(3)  
<223> Gly, Leu, Phe, Asn, Ser, Gln

<400> 29  
Asn Lys Xaa Asp  
1

<210> 30  
<211> 4  
<212> PRT  
<213> Escherichia coli

<220>  
<221> BINDING  
<222> (1)..(4)  
<223> /note="Putative GTP binding motif G4"

<400> 30  
Thr Ser Leu Asp  
1

<210> 31  
<211> 4  
<212> PRT  
<213> Bacillus subtilis

<220>  
<221> BINDING  
<222> (1)..(4)  
<223> /note="Putative GTP binding motif G4"

<400> 31  
Asn Lys Phe Leu  
1

<210> 32  
<211> 4  
<212> PRT  
<213> Bacillus stearothermophilus

<220>  
<221> BINDING  
<222> (1)..(4)  
<223> /note="Putative GTP binding motif G4"

<400> 32  
Asp Lys Phe Leu  
1

<210> 33  
<211> 4  
<212> PRT

<213> Clostridium difficile

<220>

<221> BINDING

<222> (1)..(4)

<223> /note="Putative GTP binding motif G4"

<400> 33

Asn Glu Gly Ile

1

<210> 34

<211> 4

<212> PRT

<213> Clostridium acetobutylicum

<220>

<221> BINDING

<222> (1)..(4)

<223> /note="Putative GTP binding motif G4"

<400> 34

Ile Leu Asn Asp

1

<210> 35

<211> 4

<212> PRT

<213> Streptococcus pneumoniae

<220>

<221> BINDING

<222> (1)..(4)

<223> /note="Putative GTP binding motif G4"

<400> 35

Leu Ile Ser Asp

1

<210> 36

<211> 4

<212> PRT

<213> Enterococcus faecalis

<220>

<221> BINDING

<222> (1)..(4)

<223> /note="Putative GTP binding motif G4"

<400> 36

Asn Gln Gln Phe

1

```

<210> 37
<211> 4
<212> PRT
<213> Staphylococcus aureus

<220>
<221> BINDING
<222> (1)..(4)
<223> /note="Putative GTP binding motif G4"

<400> 37
Glu Lys Gly Ile
1

<210> 38
<211> 4
<212> PRT
<213> Lactococcus lactis

<220>
<221> BINDING
<222> (1)..(4)
<223> /note="Putative GTP binding motif G4"

<400> 38
Thr Gly Leu Phe
1

<210> 39
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> presence of the putative CodY box in yreE

<400> 39
taattttctg ataatatagt caattt 26

<210> 40
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> presence of the putative CodY box in ctrA

<400> 40
taatttactg acaagtctgt cagtaa 26

<210> 41
<211> 26
<212> DNA

```

<213> Artificial Sequence		
<220>		
<223> presence of the putative CodY box in yciC		
<400> 41		
taatttactg acaaaattat cagaac		26
<210> 42		
<211> 26		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of the putative CodY box in optA		
<400> 42		
aaattttctg acaataataa aaattg		26
<210> 43		
<211> 26		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of the putative CodY box in optS		
<400> 43		
aaatttatcag aaaaatacaa caatat		26
<210> 44		
<211> 26		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of the putative CodY box in optS		
<400> 44		
taattttcag aataaatatga aaattc		26
<210> 45		
<211> 26		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of the putative CodY box in parA		
<400> 45		
taatttactg atagatttgt cagtaa		26

<210> 46  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> presence of the putative CodY box in aroF

<400> 46  
taatttactg acagttctgt cagtaa 26

<210> 47  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> presence of the putative CodY box in vacB1

<400> 47  
aaatttactg acaaaaaaga taatgg 26

<210> 48  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> presence of the putative CodY box in optA

<400> 48  
taattttcag aaaacataac cattat 26

<210> 49  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> presence of the putative CodY box in ypaG

<400> 49  
gaattttatg aaaaaaatat taattg 26

<210> 50  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>

<223> presence of the putative CodY box in yiaB

<400> 50

gaatttactg acgaatctat cattaa

26

<210> 51

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> presence of the putative CodY box in ysdC

<400> 51

tcatttctcg acaaattctgt cagtaa

26

<210> 52

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> presence of the putative CodY box in hemK

<400> 52

aaatttactg acaagcttgt tagtat

26

<210> 53

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> presence of the putative CodY box in prfC

<400> 53

aaatttaatg ataaaacaat tagttt

26

<210> 54

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> presence of the putative CodY box in yugB

<400> 54

aaagttactg acaaattctgt cagtaa

26

<210> 55

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> presence of the putative CodY box in murD

<400> 55  
ttatTTactg acaagTctgt cagtaa 26

<210> 56  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>

<223> presence of the putative CodY box in ywdG

<400> 56  
tatTTtactg acaaaaaaaat aagtTT 26

<210> 57  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>

<223> presence of the putative CodY box in parC

<400> 57  
taatTTactg acagCTTtgt cagtaa 26

<210> 58  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>

<223> presence of the putative CodY box in pepC

<400> 58  
aaatTTactg acagAGCTgt cagtaa 26

<210> 59  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>

<223> presence of the putative CodY box in mutM

<400> 59  
aaatTTactg acagACTTgt tagtaa 26

<210> 60		
<211> 26		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of the putative CodY box in rgpAB		
<400> 60		
aaatttactg acaactttgt cagaag		26
<210> 61		
<211> 26		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of the putative CodY box in vacB1		
<400> 61		
aaaatgtctg ataaaaatgat taatac		26
<210> 62		
<211> 26		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of the putative CodY box in recN		
<400> 62		
taatttactg acagaatttt aaattt		26
<210> 63		
<211> 26		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of the putative CodY box in llrH		
<400> 63		
aaaattacta acaaaaactgt tagtaa		26
<210> 64		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> motif in L. lactis MG1363 genome		
<400> 64		

aattttcaga aaatt	15
<210> 65	
<211> 15	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> motif in L. lactis MG1363 genome	
<400> 65	
aatttgcaga aaatt	15
<210> 66	
<211> 15	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> motif in L. lactis MG1363 genome	
<400> 66	
aattttctga taatt	15
<210> 67	
<211> 15	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> motif in L. lactis MG1363 genome	
<400> 67	
aattttcaga taatt	15
<210> 68	
<211> 15	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> motif in L. lactis MG1363 genome	
<400> 68	
attttcaga aaatt	15
<210> 69	
<211> 15	
<212> DNA	
<213> Artificial Sequence	
<220>	

<223> motif in L. lactis MG1363 genome	
<400> 69 aattttcgga aaaat	15
<210> 70	
<211> 15	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> motif in L. lactis MG1363 genome	
<400> 70 aattttcaga aaata	15
<210> 71	
<211> 15	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> motif in L. lactis MG1363 genome	
<400> 71 acttttcaga aaatt	15
<210> 72	
<211> 15	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> motif in L. lactis MG1363 genome	
<400> 72 aattttctga atatt	15
<210> 73	
<211> 15	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> motif in L. lactis MG1363 genome	
<400> 73 atttttcaga aaaat	15
<210> 74	
<211> 15	
<212> DNA	

<213> Artificial Sequence		
<220>		
<223> motif in L. lactis MG1363 genome		
<400> 74		
aattgtcaga caatt		15
<210> 75		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> motif in L. lactis MG1363 genome		
<400> 75		
atttttctga caatt		15
<210> 76		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> motif in L. lactis MG1363 genome		
<400> 76		
aattttctga acatt		15
<210> 77		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> motif in L. lactis MG1363 genome		
<400> 77		
atttttccga aaatt		15
<210> 78		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> motif in L. lactis MG1363 genome		
<400> 78		
tatTTTCAAA aaatt		15

<210> 79		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> motif in L. lactis MG1363 genome		
<400> 79		
attattctga aaatt		15
<210> 80		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> motif in L. lactis MG1363 genome		
<400> 80		
tatTTTcaaa aaatt		15
<210> 81		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> motif in L. lactis MG1363 genome		
<400> 81		
aatTTTTga aaatt		15
<210> 82		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> motif in L. lactis MG1363 genome		
<400> 82		
aaatttctga aaatt		15
<210> 83		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> motif in L. lactis MG1363 genome		
<400> 83		

aattttctga caata	15
<210> 84	
<211> 15	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> motif in L. lactis MG1363 genome	
<400> 84	
atttttctga aaata	15
<210> 85	
<211> 15	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> motif in L. lactis MG1363 genome	
<400> 85	
atttttcaga aaata	15
<210> 86	
<211> 15	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> motif in L. lactis MG1363 genome	
<400> 86	
gtttttctga aaatt	15
<210> 87	
<211> 15	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> motif in L. lactis MG1363 genome	
<400> 87	
aattttcaga agaat	15
<210> 88	
<211> 15	
<212> DNA	
<213> Artificial Sequence	
<220>	

<223> motif in L. lactis MG1363 genome

<400> 88  
aattttctaa aaagt 15

<210> 89  
<211> 15  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> motif in L. lactis MG1363 genome

<400> 89  
aattttcaga aaaca 15

<210> 90  
<211> 15  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> motif in L. lactis MG1363 genome

<400> 90  
tattttcaaa aaaat 15

<210> 91  
<211> 15  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> motif in L. lactis MG1363 genome

<400> 91  
catcttcaga aaatt 15

<210> 92  
<211> 15  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> motif in L. lactis MG1363 genome

<400> 92  
aatattcaga aaata 15

<210> 93  
<211> 15  
<212> DNA

<213> Artificial Sequence		
<220>		
<223> motif in L. lactis MG1363 genome		
<400> 93		
aattttcaaa aaact		15
<210> 94		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> motif in L. lactis MG1363 genome		
<400> 94		
aattttcaga aaaga		15
<210> 95		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> motif in L. lactis MG1363 genome		
<400> 95		
aatgttctga caaat		15
<210> 96		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> motif in L. lactis MG1363 genome		
<400> 96		
aatttttgaa aaaat		15
<210> 97		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> motif in L. lactis MG1363 genome		
<400> 97		
aattttctaa aaact		15

<210> 98		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> motif in L. lactis MG1363 genome		
<400> 98		
attttacaga aaatt		15
<210> 99		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> motif in L. lactis MG1363 genome		
<400> 99		
aattatcaga aaatg		15
<210> 100		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> motif in L. lactis MG1363 genome		
<400> 100		
aattatcaga aaatc		15
<210> 101		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> motif in L. lactis MG1363 genome		
<400> 101		
atttttctga aaatg		15
<210> 102		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> motif in L. lactis MG1363 genome		
<400> 102		

aattttctgaa	cgatt	15
<210> 103		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of putative CodY box in yufN		
<400> 103		
attatcagaa	aattt	15
<210> 104		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of putative CodY box in citB		
<400> 104		
attgtgagaa	aattg	15
<210> 105		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of putative CodY box in dppA		
<400> 105		
tttgttagaa	tattc	15
<210> 106		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of putative CodY box in hutP		
<400> 106		
gttatcagaa	ttttt	15
<210> 107		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		

<223> presence of putative CodY box in yxbC	
<400> 107	
attatcagag gatta	15
<210> 108	
<211> 15	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> presence of putative CodY box in yurPQ	
<400> 108	
aatttcagaa aataa	15
<210> 109	
<211> 15	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> presence of putative CodY box in ycgM	
<400> 109	
attttgagga tattg	15
<210> 110	
<211> 15	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> presence of putative CodY box in yhjC	
<400> 110	
aatttcagac aattc	15
<210> 111	
<211> 15	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> presence of putative CodY box in ybgE	
<400> 111	
atattctgaa attta	15
<210> 112	
<211> 15	
<212> DNA	

<213> Artificial Sequence		
<220>		
<223> presence of putative CodY box in ykbA		
<400> 112		
tttatcaaaa aagtc		15
<210> 113		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of putative CodY box in ggaA		
<400> 113		
attttcagca aaaaa		15
<210> 114		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of putative CodY box in ycgM		
<400> 114		
ataatcagaa tcttt		15
<210> 115		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of putative CodY box in yoAD		
<400> 115		
tttttatgaa aaata		15
<210> 116		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of putative CodY box in guaB		
<400> 116		
gttatctaaa tattt		15

<210> 117		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of putative CodY box in ilvD		
<400> 117		
attgtcaaaa taaaa		15
<210> 118		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of putative Cody box in yxbBC		
<400> 118		
attgacagaa ttatc		15
<210> 119		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of putative CodY box in rocA		
<400> 119		
tttttcagca aaaga		15
<210> 120		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of putative CodY box in yhdG		
<400> 120		
tttttctaac aattt		15
<210> 121		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of putative CodY box in yusC		

<400> 121	
ttttgcagaa aaaac	15
<210> 122	
<211> 15	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> presence of putative CodY box in yusC	
<400> 122	
tttcttagaa tagtg	15
<210> 123	
<211> 15	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> presence of the putative CodY box in ydjJ	
<400> 123	
attttcagaa attta	15
<210> 124	
<211> 15	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> presence of the putative CodY box in ytkC	
<400> 124	
tttttcagaa aaatg	15
<210> 125	
<211> 15	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> presence of the putative CodY box in lytE	
<400> 125	
tttttcagaa aaatc	15
<210> 126	
<211> 15	
<212> DNA	
<213> Artificial Sequence	

<220>		
<223> presence of the putative CodY box in yoaC		
<400> 126		
attgtctgaa tatta		15
<210> 127		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of the putative CodY box in ytnA		
<400> 127		
tttttctgaa tattc		15
<210> 128		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of the putative CodY box in aldY		
<400> 128		
attttcgaa aattt		15
<210> 129		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of the putative CodY box in glnQ		
<400> 129		
attttcagaa aagtt		15
<210> 130		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of the putative CodY box in ykuW		
<400> 130		
attttcagaa aataa		15

<210> 131		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of the putative CodY box in yndN		
<400> 131		
attttcagta tattt		15
<210> 132		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of the putative CodY box in yheI		
<400> 132		
tttatcagaa aaata		15
<210> 133		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of the putative CodY box in ykuM		
<400> 133		
attttcagga aattc		15
<210> 134		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of the putative CodY box in gbsA		
<400> 134		
attttcagaa caatt		15
<210> 135		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of the putative CodY box in ynaC		
<400> 135		

attttcagaa aatca	15
<210> 136	
<211> 15	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> presence of the putative CodY box in yqiQ	
<400> 136	
attgtcagaa aactt	15
<210> 137	
<211> 15	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> presence of the putative CodY box in ggaA	
<400> 137	
attttcagaa ttata	15
<210> 138	
<211> 15	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> presence of the putative CodY box in yurY	
<400> 138	
tttttcggaa tattc	15
<210> 139	
<211> 15	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> presence of the putative CodY box in ureA	
<400> 139	
tttatctgaa aattt	15
<210> 140	
<211> 15	
<212> DNA	
<213> Artificial Sequence	
<220>	

<223> presence of the putative CodY box in leuS

<400> 140  
atattcagaa tattc 15

<210> 141  
<211> 15  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> presence of the putative CodY box in yurO

<400> 141  
attttctgaa atttc 15

<210> 142  
<211> 15  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> presence of the putative CodY box in ykrQ

<400> 142  
attttctgaa attta 15

<210> 143  
<211> 15  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> presence of the putative CodY box in yvcC

<400> 143  
tttttcagta tattt 15

<210> 144  
<211> 15  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> presence of the putative CodY box in thiC

<400> 144  
tttttcagca aattt 15

<210> 145  
<211> 15  
<212> DNA

<213> Artificial Sequence		
<220>		
<223> presence of the putative CodY box in yvaV		
<400> 145		
tttttcagac aattg		15
<210> 146		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of the putative CodY box in fliR		
<400> 146		
attgtcagca tattt		15
<210> 147		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of the putative CodY box in yokA		
<400> 147		
tttttcataaa aattt		15
<210> 148		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of the putative CodY box in yqeY		
<400> 148		
tttttcataaa aattc		15
<210> 149		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of		
the putative CodY box in yjcL		
<220>		
<221> misc_feature		
<222> (1)..(15)		

<400> 149	
attgttagaa aatta	15
<210> 150	
<211> 15	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> presence of	
the putative CodY box in rapE	
<220>	
<221> misc_feature	
<222> (1)...(15)	
<400> 150	
actttcagaa tattt	15
<210> 151	
<211> 15	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> presence of the putative CodY box in bfmBB	
<400> 151	
tttttctgaa taatt	15
<210> 152	
<211> 26	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> presence of the putative CodY box in ppmA	
<400> 152	
tgattttcag aaaaatttaa gaaaaaa	26
<210> 153	
<211> 26	
<212> DNA	
<213> Artificial Sequence	
<220>	
<223> presence of the putative CodY box in Leu-A	
<400> 153	
atattttctg aaaatttctt cagtaa	26

```

<210> 154
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> presence of the putative CodY box in hsds

<400> 154
ttattatcag ataattttat caatcg                                26

<210> 155
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> presence of the putative CodY box in livJ

<400> 155
caattttctg ataattcggat atattc                                26

<210> 156
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> presence of the putative CodY box in ilvE

<400> 156
gaattttctg aaaattacaa aatata                                26

<210> 157
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> presence of the putative CodY box in gapN

<400> 157
ttattttctg aaaatttggt aaaata                                26

<210> 158
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> presence of the putative CodY box in mefE

```

<400> 158  
tcatttttg aaaaaatgat tattac 26

<210> 159  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> presence of the putative CodY box in IS1381

<400> 159  
cattttcag aaaattctt tatttc 26

<210> 160  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> presence of the putative CodY box in ugd

<400> 160  
acattttctg aaattaaaaa taatat 26

<210> 161  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> presence of the putative CodY box in hemK

<400> 161  
gaaatttctg aaaaatatga tataat 26

<210> 162  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> presence of the putative CodY box in sprl649

<400> 162  
aaatttatttg ataattctat aatttc 26

<210> 163  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> presence of the putative CodY box in spr1765

<400> 163  
aattttatctg aaaaaacgaa aaatat 26

<210> 164  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> presence of the putative CodY box in glgB

<400> 164  
caatttttg aaaaaatatt gattta 26

<210> 165  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> presence of the putative CodY box in spr2010

<400> 165  
tattttcttg aaaactctga tataaa 26

<210> 166  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> presence of the putative CodY box in spr0128

<400> 166  
tcattttcag ataaggataa aaattg 26

<210> 167  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> presence of the putative CodY box in ABC-NDB

<400> 167  
gaattgacag atgaatttgt taagaa 26

<210> 168

<211> 26		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of the putative CodY box in spr1149		
<400> 168		
aaattgaatg aaaagtataa aattaa		26
<210> 169		
<211> 26		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of the putative CodY box in rgg/spr1934		
<400> 169		
aaattgtcag aattatgaga aaatag		26
<210> 170		
<211> 26		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of the putative CodY box in gidA		
<400> 170		
cattttactg aagaatacga tattat		26
<210> 171		
<211> 26		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of the putative CodY box in abc-n/p		
<400> 171		
aaatttcttag ataaggtaat aattaa		26
<210> 172		
<211> 26		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of the putative CodY box in spr0119		
<400> 172		
atattctgtg aaaaataaaa tagtat		26

<210> 173  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> presence of the putative CodY box in hsdS 2X

<400> 173  
gaatttccag ataaactaaa aaaatc 26

<210> 174  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> presence of the putative CodY box in spr0607

<400> 174  
acatttatctg aaaaattaaa ctataa 26

<210> 175  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> presence of the putative CodY box in rpmI

<400> 175  
taattgtcag aaagttaaat aaagga 26

<210> 176  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> presence of the putative CodY box in spnIM

<400> 176  
aaatttatcta ataacaaaaa tattat 26

<210> 177  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>

<223> presence of the putative CodY box in *spnIM*

<400> 177  
ttatcacag aaagaacaaa aaatgc 26

<210> 178  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> presence of the putative CodY box in *ilvD*

<400> 178  
gaattttcag aaaattctat acgcat 26

<210> 179  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> presence of the putative CodY box in *arcA*

<<400> 179  
atatttttg aaaaattttt taaaaaa 26

<210> 180  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> presence of the putative CodY box in ABC-NBD

<400> 180  
aaattgacaa ataaaaattt gaatat 26

<210> 181  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> presence of the putative CodY box in *mfd*

<400> 181  
tactttcag aagaattaca gaatag 26

<210> 182  
<211> 26

<212> DNA  
<213> Artificial Sequence

<220>  
<223> presence of the putative CodY box in spr0157

<400> 182  
gaattttcag aataatctgt atatgt 26

<210> 183  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> presence of the putative CodY box in murM

<400> 183  
gaatttcctg aaaatctggc tattat 26

<210> 184  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> presence of the putative CodY box in zwf

<400> 184  
gattttcgg aaaattatgt tagaat 26

<210> 185  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> presence of the putative CodY box in licD1

<400> 185  
caatattttag aaaaaaaaaaga aattaa 26

<210> 186  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> presence of the putative CodY box in spr1403

<400> 186  
atattttctg aacaatataat atattc 26

```

<210> 187
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> presence of the putative CodY box in relA

<400> 187
cattttgcgg aaaatttgagt aaatat                                26

<210> 188
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> presence of the putative CodY box in spr1650

<400> 188
taattttctg atttttgtaa aaataa                                26

<210> 189
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> presence of the putative CodY box in pcpA

<400> 189
ttatTTTcta atagatataaa aattat                                26

<210> 190
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> presence of the putative CodY box in rsuA

<400> 190
taaatttcag attgatgaaa aaatag                                26

<210> 191
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> presence of the putative CodY box in ptsG

```

<400> 191  
aatttttag aaaaaagtgt aatttt 26

<210> 192  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> presence of the putative CodY box in hsdS

<400> 192  
aaattcactg aaagttaaa tatgac 26

<210> 193  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> presence of the putative CodY box in spr0803

<400> 193  
gaattgccag actatttaa tactat 26

<210> 194  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> presence of the putative CodY box in spr0826

<400> 194  
agattttaag taaaatttat tagtaa 26

<210> 195  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> presence of the putative CodY box in flaV

<400> 195  
aaattttaga aaaaattaaa gaatac 26

<210> 196  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>		
<223> presence of the putative CodY box in ABC-NP		
<400> 196		
caattatctg atcatctgaa aaatat		26
<210> 197		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of the putative CodY box in gbs1632		
<400> 197		
attatcagaa tattg		15
<210> 198		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of the putative CodY box in gbs1105		
<400> 198		
attttcagaa aaata		15
<210> 199		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of the putative CodY box in gbs0662		
<400> 199		
tttatacagaa aattt		15
<210> 200		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of the putative CodY box in gbs2002		
<400> 200		
attttctgaa tattc		15
<210> 201		
<211> 15		

<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of the putative CodY box in gbs1489		
<400> 201		
ttttctgaa tattt		15
<210> 202		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of the putative CodY box in gbs0054		
<400> 202		
attttcaaaa aattt		15
<210> 203		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of the putative CodY box in gbs0008		
<400> 203		
attttcaaaa aattt		15
<210> 204		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of the putative CodY box in gbs1406		
<400> 204		
attgtcagaa ttttc		15
<210> 205		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of the putative CodY box in gbs0144		
<400> 205		
attatctgaa aattt		15

<210> 206		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of the putative CodY box in gbs0898		
<400> 206		
attatctgaa tatta		15
<210> 207		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of the putative CodY box in gbs2007		
<400> 207		
attttcagta tattc		15
<210> 208		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of the putative CodY box in gbs0235		
<400> 208		
attttcagaa aatgt		15
<210> 209		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of the putative CodY box in gbs0577		
<400> 209		
attatcagaa gattt		15
<210> 210		
<211> 15		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> presence of the putative CodY box in gbs0143		

<400> 210  
attttcagat aatttg 15

<210> 211  
<211> 15  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> presence of the putative CodY box in gbs0604

<400> 211  
attttagaa aatta 15

<210> 212  
<211> 15  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> presence of the putative CodY box in dnaG/ ftsA

<400> 212

attttctgaa taatt 15

<210> 213  
<211> 15  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> presence of the putative CodY box in gbs1259

<400> 213  
atttcagga tattt 15

<210> 214  
<211> 288  
<212> DNA  
<213> Lactobacillus lactis

<220>  
<221> CDS  
<222> (243)..(288)  
<223>

<220>  
<221> RBS  
<222> (234)..(237)

```

<223>

<220>
<221> -10_signal
<222> (198)..(203)
<223>

<220>
<221> -35_signal
<222> (175)..(179)
<223>

<400> 214
ctgatatacaa taaagaataa aaagtccaaa acagagcagc atgaaaaata aaacaataat 60
aaaaggcgtt ttttagtatga ttactgctt tattatttcc tccaaaactt ttgccttacc 120
tttatttcgc gtaatgttca gaaaattcat gaacataacct aaaatagtaa attttgcaa 180
atatgcagaa aaagttagtat acttttattt agtctattt gaaagattt attgaggtaa 240
atatggaaag tgaaaatatt ttggaagcaa aacaagttag tgttgctt 288

<210> 215
<211> 15
<212> PRT
<213> Lactobacillus lactis

<400> 215
Met Glu Ser Glu Asn Ile Leu Glu Ala Lys Gln Val Ser Val Ala
1 5 10 15

<210> 216
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> WT

<400> 216
aatgttcaga aaattcatga acatac 26

<210> 217
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Opp15 (a)

<400> 217
aatattaaga aaattcatga acatac 26

<210> 218
<211> 26
<212> DNA

```

<213> Artificial Sequence		
<220>		
<223> Opp15 (b)		
<400> 218		
actgtgccga aaattcatga acatac		26
<210> 219		
<211> 26		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> Opp 2		
<400> 219		
aactgcagga aaattcatga acatac		26
<210> 220		
<211> 30		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> WT <i>oppD</i> upstream region		
<400> 220		
cgtaatgttc agaaaattca tgaacatacc		30
<210> 221		
<211> 30		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> MUT2, mutant in <i>oppD</i> upstream region		
<400> 221		
cgtaatgttc tgaaaattca tgaacatacc		30
<210> 222		
<211> 30		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> MUTF, mutant in <i>oppD</i> upstream region		
<400> 222		
cgtaatgttc agaaaattca tggacatacc		30

<210> 223		
<211> 30		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> MUT4, mutant in <i>oppD</i> upstream region		
<400> 223		
cgtaatgttc agaaaattca tgagcataacc		30
<210> 224		
<211> 30		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> MUT3, mutant in <i>oppD</i> upstream region		
<400> 224		
cgttagtgttc agaaaattca tgaacataacc		30
<210> 225		
<211> 30		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> MUT10, mutant in <i>oppD</i> upstream region		
<400> 225		
cgtaatgtcc agaaaattca tgaacataacc		30
<210> 226		
<211> 30		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> MUT16, mutant in <i>oppD</i> upstream region		
<400> 226		
cgtaatgttc ggaaaattca tgaacacacc		30
<210> 227		
<211> 26		
<212> DNA		
<213> Artificial Sequence		
<220>		
<223> motif as observed in <i>L. lactis</i>		

<220>  
<221> misc\_feature  
<222> (1)..(26)  
<223> /note="Sequence wherein n can be any nucleotide"

<400> 227  
anaattttct ganaaatnna tnanta

26

<210> 228  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> consensus motif as observed in L. lactis

<220>  
<221> misc\_feature  
<222> (1)..(26)  
<223> /note="Sequence wherein n can be any nucleotide"

<400> 228  
whaattdtcw gahaawtnnr wnadww

26

<210> 229  
<211> 15  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> consensus motif as observed in B. subtilis

<400> 229  
awttdtcaga awwwt

15

<210> 230  
<211> 14  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> motif as observed in B. subtilis

<220>  
<221> misc\_feature  
<222> (1)..(14)  
<223> /note="Sequence wherein n can be any nucleotide"

<400> 230  
attntcagaa aatt

14

<210> 231  
<211> 225

```

<212> DNA
<213> Lactococcus lactis Wg2

<220>
<221> promoter
<222> (1)..(225)
<223> /note="prtP/prtM promoter region"

<400> 231
tgctaaaaat ttcaaaacat ctatagtctg taaacggcta aataataacg ctaaaagtta 60
attacagat aaaaaaatta atagaagatt aaaatttcg ttgaatttgt tcttcaatag 120
tatataatat aatagtatat aatattatat aatataatct taactacatc aagcgttaggg 180
tttgatttgg ttatgaaact ttggaaagt ggaggatatt ggatg 225

<210> 232
<211> 230
<212> DNA
<213> Lactococcus lactis SK11

<220>
<221> promoter
<222> (1)..(230)
<223> /note="prtP/prtM promoter region"

<400> 232
tgctaaaaat ttcaaaacat ctatagtctg taaacggcta aataataacg ctaaaagtta 60
attacagat aaaaaaatta atagaagatt aaaatttcg ttgaatttgt tcttcaatag 120
tatataatat aatagtatat aatattatat tatataatat aatcttaact acatcaagcg 180
taggcttga tttggttatg aaactttgg aaagtggagg atattggatg 230

<210> 233
<211> 230
<212> DNA
<213> Lactococcus lactis E8

<220>
<221> promoter
<222> (1)..(230)
<223> /note="prtP/prtM promoter region"

<400> 233
tgctaaaaat ttcaaaacat ctatagtctg taaacggcta aataataacg ctaaaagtta 60
attacagat aaaaaaatta atagaagatt aaaatttcg ttgaatttgt tcttcaatag 120
tatataatat aatattatat aatattatat tatataatat aatcttaact acatcaagcg 180
taggcttga tttggttatg aaactttgg aaagtggagg atattggatg 230

<210> 234
<211> 230
<212> DNA
<213> Lactococcus lactis BGMN1-5

<220>
<221> promoter

```

<222> (1)..(230)  
<223> /note="prtP/prtM promoter region"  
  
<400> 234  
tgctaaaaat ttcaaaacat ctatagtctg taaacggcta aataataacg ctaaaagtta 60  
atttacagat aaaaaaaatta atagaagatt aaaatttttag ttgaatttgt tctttaatag 120  
tatataatat aatagtatat actattatat tatatactat tatattaact acatcaagcg 180  
tacattttga tttgggttatg aaacttttgg aaagtggagg gtattggatg 230